DOCUMENT RESUME

ED 368 879 CE 066 029

AUTHOR	McDevitt, Ellen
TITLE	An In-Service Math Instruction Program for Tutors. Final Report.
INSTITUTION	South Hills Literacy Improvement Center, Bethel Park, PA.
SPONS AGENCY	Pennsylvania State Dept. of Education, Harrisburg. Bureau of Adult Basic and Literacy Education.
PUB DATE	Jun 93
CONTRACT	99-3013
NOTE	90p.
PUB TYPE	Reports - Descriptive (141) -- Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Adult Basic Education; Annotated Bibliographies; *Literacy Education; *Material Development; *Mathematics Instruction; Mathematics Skills; Numeracy; Program Development; *Tutors; *Volunteer Training; Workshops
IDENTIFIERS	353 Project

ABSTRACT

An inservice training program for tutors was developed that was based on a review of existing math materials for students at the 5-8 grade level and an analysis of the results of standardized math tests administered to literacy students in Allegheny County, Pennsylvania. Nearly 100 adult literacy students were tested in Fall 1992. Results were compiled into a profile of the math instruction needs of the adults tested. Based on that profile, a training program was developed for literacy tutors, and inservice programs were provided in May and June 1993. A tutor manual and packet of manipulatives were developed and provided to each workshop participant. Each participant completed an evaluation of the training. A 62-page annotated bibliography of math instructional materials was developed and included with the tutor training materials. Project participants concluded that all student instruction must begin at the same point, no matter what the presumed level of knowledge might be. The instructional package developed was effective and beneficial to participants, but they requested more examples and anecdotal information. (The eight-page report is followed by these appendixes: list of needed specific math competencies; checklist for reviewing textbooks; master prescription sheet for sample and list of objectives ranked in descending order of need; annotated bibliography; and the handbook with materials on place value; fractions, decimals, and percents; problem solving; word problems; and practical applications. Contains 36 references.) (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 368 879

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

C Kieran

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

RECEIVED
AUG 30 1993
BUREAU OF ADULT BASIC AND LITERACY EDUCATION

FINAL REPORT

AN IN-SERVICE MATH INSTRUCTION PROGRAM FOR TUTORS

by

Ellen McDevitt

Associate Director

South Hills Literacy Improvement Center

Bethel Park, PA. 15102

412-854-8433

Funded as a Section 353 Project #099-3013 for $4,087.00 in fiscal year 1992-93 by the Pennsylvania Department of Education, Bureau of Adult and Literacy Education, Harrisburg, PA.

(The activity which is the subject of this report was supported in part by the U.S. Department of Education. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Department of Education or the Pennsylvania Department of Education, and no official endorsement by these agenices should be inferred.)

CE 066 027

BEST COPY AVAILABLE

ABSTRACT PAGE

Title: An In service Math Instruction Program for Tutors

Project No.: 099-3013 **Funding:** $4087.00

Project Director: Ellen McDevitt **Phone No.:** 412-854-8433

Agency Address: 301 Church Road, Bethel Park, PA 15102

Description: This project developed a tutor in service program in math. The content of the in service was based on the results of tests administered to literacy students. Training was conducted at two sites in Allegheny County through the Region 4 Staff Deve lopment Coordinator. Presentation included an examination of math principles, a review of the results of the student testing, and instruction on teaching the math principles found to be most needed by this population. An annotated bibliography of existing math instruction materials was compiled and included with the workshop handbook.

Objectives: To test literacy students to determine their specific training needs in math. To develop a tutor in service program of three hours in duration. To instruct tutors in techniques for teaching math to adults. To conduct two in service sessions over a two-month period for tutors and literacy professionals. To evaluate the effectiveness of that program and to compile a final report with recommendations.

Target Audience:

Professionals and tutors directly involved in teaching math to adult literacy students.

Product(s)--if applicable:

Annotated bibiography of existing math instruction materials; instructional handbook; final report.

Method(s) of Evaluation:

At the conclusion of each in-service session, participants were asked to complete an evaluation form. Participants in the in-service seesions willl be mailed a follow up evaluation to complete after they have had a chance to put the principles discussed iinto practice.

Findings: After testing nearly 100 literacy students, we found that knowledge of math varied widely, no matter what the presumed level of understanding was. After a review of the literature on the subject of teaching adults, we developed a training program that relies on hands-on, manipulative-based instruction.

Conclusions: Project director concluded that all student instruction must begin at the same point, no matter what the presumed level of knowledge might be. The instructional package developed was found to be effective and beneficial by participants, but they requested more examples and anecdotal information be included.

Descriptors: (To be completed only by AdvancE staff)

Introduction

Lack of skill in mathematics is a widely-accepted condition and one which the South Hills Literacy Improvement Center has addressed with adult literacy students since its beginnings. But teaching math to adult literacy students presents special problems, not the least of which is knowing where to begin with an adult whose life experiences may mask the real level of their understanding. The goal of this project was to get a profile of the level of understanding of math concepts among adult literacy students and to create a tutor training program to address the instructional needs of those students.

Students were tested in Allegheny County in the fall of 1992. Results of the test were compiled into a profile of the math-instruction needs of the adults tested. Based on that profile, a training program was developed for literacy tutors, and in-service programs provided through the Region 4 Staff Development Coordinator. In-service sessions were presented in May and June of 1993. Project Director was Ellen McDevitt, Associate Director of the South Hills Literacy Improvement Center.

The report of this project should be of interest to anyone interested in beginning math instruction in their adult literacy program, or to tutors or administrators whose programs already have math instruction but who want to expand

or change it. Copies of the report and the training materials are available from AdvancE or from the Pennsylvania Department of Education, Bureau of Adult and Literacy Education, 333 Market Street, Harrisburg, PA. 17126-0333

Statement of the Problem

Many students who test at higher levels in reading do less well in math, and are unable to hold their own in a GED class. They need one-on-one tutoring, but there is no tutor training program available in math and no real information on the instruction needs of this group. The program developed by the Juniata-Mifflin County Vo-Tech School dealt with transitioning students from one-on-one tutoring to the classroom. This project addressed the lack of tutor training in math for the 5-8 grade level student who will be continuing in the one-on-one situation. It did so by developing an in-service training program for tutors based on (1) a review of existing math materials for students at the 5-8 grade level and (2) an analysis of the results of standardized math tests administered to literacy students in Allegheny County.

Goals and Objectives

Objective 1: To develop a profile of the math instruction needs of adult literacy students in Allegheny County.

The project director tested nearly 100 adult literacy students in Allegheny County using the ABLE 2. Tests were scored and a list of learning objectives compiled based on the Norms Booklet for the ABLE 2. By matching the questions with the objectives they measured for each student, the project director was able to compile a profile of the math instruction needs of each student. When all the testing was completed, a profile of the entire group was generated which provided a clear picture of the kinds of instruction most needed by the greatest number of students. (Appendix A)

Objective 2: To develop a tutor training program in math based on the results of the testing conducted in objective 1 and on a review of existing math instruction materials.

The project director contacted textbook publishers, requesting copies of their math instruction materials for adult students at the 5-8 grade levels. Each text was reviewed by either the staff or volunteers of the South Hills Literacy Improvement Center according to a form created by the

project director. Those reviews were then compiled into an annotated bibliography. (Appendices B and C)

To create a tutor training program, the project director reviewed: the results of the testing to determine instructional needs, the annotated bibliography to determine the kinds of materials currently available, and literature on the education of adults to determine the most effective methods of instruction, particularly books by Malcolm Knowles and Cyril Houle, and Effective Strategies for Teaching Adults, by Seaman and Fellenz.

Procedures

The ABLE 2 was used to test literacy students to determine what kind of math instruction was most needed. The test was administered to all students of the South Hills LIteracy Improvement Center. In addition, other literacy programs in Allegheny County were contacted to enlist their support in testing their students. The Greater Pittsburgh Literacy Council and the Chatham College Adult Literacy Center allowed the project director to test their students. A prescription sheet was developed based on the objectives specified in the Norms Booklet of the ABLE 2 and individual prescriptions generated for each student. After all students were tested and tests scored, a master prescription sheet was

created for the total sample and the objectives ranked in descending order of need. (Appendix D)

Next the project director contacted textbook publishers for copies of the math instruction materials applicable to the 5-8 grade level adult learner. A checklist was developed and used to review each textbook that was received. The results of those reviews were compiled into an annotated bibiography. (Appendices B and C)

The project director then reviewed materials dealing the the education of adults, specifically The Adult Learner: A Neglected Species by Malcolm Knowles, The Design of Education by Cyril Houle, and Effective Strategies for Teaching Adults by Don Seaman and Robert Fellenz.

A tutor training program was developed based on the above information and presented to tutors and literacy professionals in May and June of 1993 in Allegheny County through the Region 4 Staff Development Coordinator. Each participant received a handbook and a packet of manipulatives that were then used during the training session.(Appendix E) At the conclusion of the training sessions, participants were asked to evaluate the content of the session.(Appendix F)

Results

All objectives specified in the proposal were met. As a result of the testing, a profile of the math instruction needs

of students was created and used as the basis for creating a tutor training program in math. A Tutor Manual and a packet of manipulatives were developed and provided to each workshop participant. An evaluation form was developed and each participant completed an evaluation of the training. A 62-book annotated bibliography of math instructional materials was developed and included with the tutor training materials.

During the conduct of this project, the project director was able to make several interesting observations. It was obvious in certain testing situations, that the format of the test was as big a problem for some students as the problems themselves. Older students are not familiar with the fill-in-the-circle style of standardized test that the ABLE 2 represents. In some cases, students were absolutely unable to make the connection between a question, the answer, and the need to fill in the correct circle on the answer sheet. In those instances, the project director allowed students to simply write the answers in order on a plain sheet of paper. This difficulty with the format of the test needs to be addressed in any future testing of adults if a true picture of the adult's math ability is to be ascertained.

After reviewing the literature on adult education and the results of the tests, the project director concluded that using manipulatives and getting the students out of their chairs and working with one another was the best way to teach

adults mathematics. Accordingly, a packet of manupulatives was presented to each workshop participant. The packet included 100 toothpicks and 10 rubber bands; 10 clothespins; 1 wire hanger; a Hershey Bar; 25 colored index cards; and a small ruler. During the training sessions, participants learned how and when to use these manipulatives and how to create their own.

Finally, it became obvous when reviewing the results of the testing that the life experiences of students sometimes mask the real level of understanding of math concepts. So that, a student may understand how to add and subtract money, but may not really understand decimals and their use. A student may understand how to measure a room in order to install baseboards, but may not understand the principles and applications of geometry. It was concluded, therefore, that all instruction needs to begin with basic number operations, no matter what the presumed level of understanding of math concepts may be. Students who know the materials will sail through the basics into the more difficult materials. But tutors will be able to determine early-on when a student doesn't understand a basic concept and both student and tutor will be saved the frustration of trying to learn an advanced concept before the fundamentals are mastered.

Evaluation

Workshop participants were asked to complete an evaluation of the training session. Most participants rated as excellent the new techniques presented and the new ideas discussed. Most participants rated as good or excellent the information presented on new materials available, the practical value of the information presented, and the insight provided on the needs of adult math students. When asked what they liked most about the workshop, participants listed the opportunity to interact with one another, the use of the manipulatives, and insights into what specifics students need to address. Many participants felt that the workshop would be improved by including more anecdotal information about when and how to create and use manipulatives.

Dissemination

Copies of the final report for this project, the tutor training manual and a list of the manipulatives to be included in the training are available from the Pennsylvania Department of Education, Bureau of Adult and Literacy Education, 333 Market Street, Harrisburg, PA 17126-0333 and from AdvancE at the same address.

APPENDIX A

SPECIFIC MATH COMPETENCIES - BY FUNCTION

Addition

1. more than 2 2-digit numbers
2. horizontally
3. decimals expressed as dollars and cents
4. common fractions with unlike denominators
5. two mixed fractions with unlike denominators

Subtraction

1. 3 digits from 4 digits; 4 digits from 4 digits
2. two common fractions with unlike denominators
3. a common fraction from a mixed fraction, each with different denominator
4. two decimals expressed as dollars and cents, in horizontal form

Multiply

1. 2 digits by 2 digits; 3 digits by 3 digits; 3 digits by 2 digits
2. 3 digits by a number less than 10, with zero
3. 4 digits by 2 digits, with zero
4. 2 decimals, each expressed in hundredths
5. 2 common fractions
6. 3 digits by 3 digits, with zero

Divide

1. 4 digits by a number less than 10
2. 5 digits by 2 digits, with zero
3. 4 digits by 2 digits
4. a mixed decimal by a decimal fraction
5. a common fraction by a whole number
6. 4 digits by 2 digits

Percentages

1. find the percentage of a number
2. given percent and percentage, find the base

Other

1. solve a linear equation
2. solve a common power

EFM:ljk
3/3/93

APPENDIX B

SOUTH HILLS LITERACY IMPROVEMENT CENTER

Checklist for Math Books

Book Title: _____ Publisher: _____

Basic Facts	Drill	Practice
Addition	_y _n	_y _n
Subtraction	_y _n	_y _n
Multiplication	_y _n	_y _n
Division	_y _n	_y _n
Fractions	_y _n	_y _n
Decimals	_y _n	_y _n
Percentages	_y _n	_y _n
Word Problems	_y _n	_y _n
Place Value	_y _n	_y _n
Averaging	_y _n	_y _n
Measurement (Units of length, weight, time, liquid)	_y _n	_y _n
Graphs	_y _n	_y _n
Circle	_y _n	_y _n
Line	_y _n	_y _n
Bar	_y _n	_y _n
Area	_y _n	_y _n
Volume	_y _n	_y _n
Perimeter	_y _n	_y _n
Adding Units	_y _n	_y _n
Charts	_y _n	_y _n
Changing from one unit to another	_y _n	_y _n
Subtracting Units	_y _n	_y _n
Multiplying Units	_y _n	_y _n
Dividing Units	_y _n	_y _n

	Drill	Practice
Properties of Numbers		
Signed Numbers	_y _n	_y _n
Powers	_y _n	_y _n
Roots	_y _n	_y _n
Order of Operations	_y _n	_y _n
Algebra		
Writing Expression	_y _n	_y _n
Mononomials	_y _n	_y _n
Simplifying	_y _n	_y _n
Substitutions	_y _n	_y _n
One-Step Equations	_y _n	_y _n
Two-Step Equations	_y _n	_y _n
Ratio and Proportion	_y _n	_y _n
Inequalities	_y _n	_y _n
Geometry		
Lines and Angles	_y _n	_y _n
Triangles	_y _n	_y _n
Formulas	_y _n	_y _n
Ratio and Proportion	_y _n	_y _n
Coordinates	_y _n	_y _n
Slope of a Line	_y _n	_y _n
Circumference	_y _n	_y _n
Square Roots	_y _n	_y _n

	Drills	Practice
Whole Numbers		
Addition	_y _n	_y _n
Carrying	_y _n	_y _n
Subtraction	_y _n	_y _n
Subtracting from Zeros	_y _n	_y _n
Multiplication	_y _n	_y _n
Multiplying with Zeros	_y _n	_y _n
Division	_y _n	_y _n
Long Division	_y _n	_y _n
Dividing into Zeros	_y _n	_y _n
Place Value	_y _n	_y _n
Zero as a Place Holder	_y _n	_y _n
Rounding	_y _n	_y _n
Word Problems	_y _n	_y _n
Carrying	_y _n	_y _n
Selection of Operation	_y _n	_y _n
Approximations	_y _n	_y _n
Percents		
Conversions	_y _n	_y _n
To decimals	_y _n	_y _n
To fractions	_y _n	_y _n
Adding	_y _n	_y _n
Subtracting	_y _n	_y _n
Multiplying	_y _n	_y _n
Dividing	_y _n	_y _n
Percent wheel or box	_y _n	_y _n

	Drill	Practice
Fractions		
Conversions	_y _n	_y _n
To percents	_y _n	_y _n
To decimals	_y _n	_y _n
Adding	_y _n	_y _n
Subtracting	_y _n	_y _n
Multiplying	_y _n	_y _n
Dividing	_y _n	_y _n
Mixed Numbers	_y _n	_y _n
Improper	_y _n	_y _n
Decimals		
Money	_y _n	_y _n
Rounding	_y _n	_y _n
Adding	_y _n	_y _n
Carrying	_y _n	_y _n
Subtracting	_y _n	_y _n
Borrowing	_y _n	_y _n
Subtracting from Zeros	_y _n	_y _n
Multiplying	_y _n	_y _n
Multiplying Money	_y _n	_y _n
Word Problems	_y _n	_y _n
Carrying	_y _n	_y _n
Dividing Money	_y _n	_y _n
Conversions	_y _n	_y _n
To fractions	_y _n	_y _n
To percents	_y _n	_y _n

	Drill	Practice
Practical Math Applications		
Addition	_y _n	_y _n
Subtraction	_y _n	_y _n
Multiplication	_y _n	_y _n
Division	_y _n	_y _n
Money	_y _n	_y _n
Measurement	_y _n	_y _n
Geometry	_y _n	_y _n
Algebra	_y _n	_y _n
Decimals	_y _n	_y _n
Percentages	_y _n	_y _n
Fractions	_y _n	_y _n
Budgeting	_y _n	_y _n
Liquid Measure	_y _n	_y _n
Scales	_y _n	_y _n
Interest - Charge Cards	_y _n	_y _n
Commissions	_y _n	_y _n
Sewing	_y _n	_y _n
Recipes	_y _n	_y _n
Weights	_y _n	_y _n
Dimensions	_y _n	_y _n
Thermometers	_y _n	_y _n
Calendars	_y _n	_y _n
Schedules	_y _n	_y _n
Time	_y _n	_y _n
Mileage/Maps	_y _n	_y _n
Checkbooks/Savings Accounts	_y _n	_y _n
Numerical Order	_y _n	_y _n
Calculators	_y _n	_y _n
Sales Bills	_y _n	_y _n
Catalog Orders	_y _n	_y _n

	Drill	Practice
Practical Math Applications (continued)		
Paycheck Stubs/Rate of Pay	_y _n	_y _n
Correct Change	_y _n	_y _n
Ordering from a Menu	_y _n	_y _n
Discounts	_y _n	_y _n
Purchase Orders	_y _n	_y _n
Sports Averages	_y _n	_y _n
Lowest Unit Price	_y _n	_y _n

Practice Tests		
Unit	_y _n	_y _n
Total	_y _n	_y _n

Was anything missing? If so, what _____

_____

_____

_____

_____

EFM:ljk

APPENDIX C

Bibliography

AMERICAN GUIDANCE SERVICE

Harmeyer, Kathleen. Mathematics for Consumers, American Guidance Service, Circle Pines, MN, 1992.

Measurement of length, weight, time, liquid, graphs, extensive practical math applications - money, measurement, decimals, percentages, fractions, budgeting, liquid measure, scales, interest, commissions, calories, RDA, recipes, dimensions, time, distance, travel, time zones, checkbook and saving accounts, numerical order, calculators, sales bills, catalog orders, wages, paychecks, discounts, mortgages, taxes, careers.

Jacobs, Donald H. and Treff, August V. General Mathematics, American Guidance Service, Inc., Circle Pines, MN, 1988.

Addition and subtraction of whole numbers, renaming, multiplication, zeros, division, fractions, mixed numbers and improper fractions, decimals, rounding, powers of ten, ratios and proportions, word problems, percents, measurement of time, linear measurements, area, volume, metrics, circumference. Extensive practice.

Jones, Wilmer. Math for the Consumer, American Guidance Service, Inc., Circle Pines, MN, 1990.

Addition and subtraction of decimals, rounding, multiplication and division of decimals, changing percents to decimals and decimals to percents, finding percents, addition and subtraction of fractions. Checking accounts, income, planning a budget, savings accounts, simple and compound interest, consumer credit, purchasing a car, taxes, investments. Extensive practice.

Jones, Wilmer. Applied Mathematics, American Guidance Service, Inc., Circle Pines, MN, 1988.

Decimals, percents, fractions, bank accounts, income and commission, making a budget, consumer credit, purchasing a car and house, taxes, investments. Good explanation of financial terms.

Treff, August V. and Jacobs, Donald H. Life Skills Mathematics, American Guidance Service, Inc., Circle Pines, MN, 1992.

Treff, August V. and Jacobs, Donald H. Life Skills Mathematics, Student Workbook, American Guidance Service, Inc., Circle Pines, MN, 1992.

Counting calories, surface area, mathematics in sports, averages, adjusting recipes, multiplication and division of fractions, perimeter, spending money, using a map, time, installment buying, area, volume, temperature. Basic skills review: addition, subtraction, multiplication, division, decimals, fractions, renaming, percents. Extensive practice.

Treff, August V. and Jacobs, Donald H. Basic Mathematics Skills, American Guidance Service, Inc., Circle Pines, MN, 1992.

Basic number functions, circle graphs, area, approximations, fractions, probability, decimals, extensive practical math applications with geometry, charts, credit, sewing, recipes, weights, dimensions, thermometers, schedules, time, maps, accounts, calculators, sales bills, paychecks, sports averages. Great for practical applications.

ARCO

Nardi, William A. How to Solve Algebra Word Problems, Arco, Prentice Hall General Reference, 15 Columbus Circle, New York, NY, 1991.

Translating English terms in Algebra symbols and equations, solving equations, distance, rate, time, investment problems, work problems, attendance problems, lever problems, ratio, proportion, inequalities, problems with two variables, guadratic equation, trigonometric word problems, probabilities, permutations and combinations, squares and square roots.

CONTEMPORARY BOOKS, INC.

Frechette, Ellen C. Number Power 7, Problem Solving and Test-Taking Strategies, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1991.

Steps to understanding word problems; practice with basic number operations, graphs, value, area, perimeter, measurement, averaging, place value; algebraic expression, one and two-step equations, ratio and proportions; approximations; decimal, percent and fraction conversions; practice applications - budgeting, weights, dimensions, calendars, schedules, time, mileage, maps, bills, numerical order, discounts.

Howett, Jerry. Number Power 1, Addition, Subtraction, Multiplication and Division, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1988.

Basic facts, including word problems and place value, rounding, regrouping, using zero as a place-holder, practical applications with money, measures, weights, mileage, maps, monies. Good practice book.

Howett, Jerry. Number Power 2, Fractions, Decimals and Percents, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1988.

Basic functions for fractions, decimals and percents, finding a common denominator, reading a ruler and a metric ruler, perimeter, area, volume, circumference. Applications: changing a recipe, rounding money, finding interest, unit pricing, finding percent saved, tax rate schedule, working on a budget, installment buying. Lots of practice.

Mitchell, Robert. Number Power 3, Algebra, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1988.

Practice in basic facts, formulae, graphs; number properties, signed numbers, powers, roots; working algebraic expressions, simplifying, one and two-step equations; geometric applications; practical applications. May be too advanced for mid-level students.

Mitchell, Robert, Breakthroughs in Mathematics and Problem Solving Skills, Contemporary Books, Inc., Chicago, Illinois, 1989.

Skills inventory: for graphs, schedules and charts, maps, circle graphs, bar graphs, pictographs, line graphs; strategies for problem solving; lots of practical applications -- maps, mileage, tax tables, money, budgeting, scales, weights, calendars, banking, bills, rate of pay.

Mitchell, Robert and Prickel, Donald. Number Power 5, Graphs, Tables, Schedules and Maps, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1991.

Skills inventory for graphs, schedules and charts, maps; circle graph, bar graphs, pictogrgraphs, line graphs; strategies for problem solving; lots of practical applications - maps, mileage, tax tables, money, budgeting, scales, weights, calendars, banking, bills, rate of pay.

Mitchell, Robert and Prickel, Donald. Number Power 4, Geometry, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1989.

Focus on angles, triangles, planes and solid figures. Area, volume, perimeter, work with protractors, parallel lines and transversals, pythagorean theorem. Adding, subtracting, multiplying and dividing units, working with cubes, rectangular solids, cylinders, cones, and solving two-step volume problems. Applications: The work triangle, applying the Pythagorean theorem, tiling a room, building a patio, carpeting a room, yard work, changing volume to capacity, and using geometry in photography. Lots of examples.

Mitchell, Robert. Calculator Power, Computation, Problem Solving, Consumer Math, Workplace Math, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1991.

Basic number operations on a calculator, estimation, multi-step word problems, decimals, common fractions, finding a percent, using a calculator's memory, powers, square roots, right triangles and Pythagorean theorem. Applications: Ordering from a menu, keeping a mileage record, balancing a checkbook, best buy shopping, computing distance rate and time, completing payroll forms, computing simple interest, family budgeting. Lots of examples and explanations.

Stone, Calvin R., Fitzgerald, Penny and Sarko, Janet. LifeScenes, LifeSkills, Developing Consumer Competence, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1986.

Lots of practical application but few practice problems for each lesson.

Suter, Allan, D. Number Sense, Whole Number Addition & Subtraction, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Basic addition and subtraction functions, place value, regrouping, problem solving strategies, word problems, applications, picture problems, reading a map, using checks and calendars, comparing prices.

Suter, Allan D. Number Sense, Whole Number Multiplication & Division, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Very good explanation of the meaning of multiplication and division; some practice, some rounding, estimating, selection of operation, word problems and practical applications.

Suter, Allan D. Number Sense, The Meaning of Fractions, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Basic operation with fractions; graphs, word problems, some charts, selection of operation, conversions; practical applications - measurement, weights, mileage and maps.

Suter, Allan D. Number Sense, Fraction Addition & Subtraction, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Basic operations with fractions; practiced application - money, liquid measure, weights, time, mileage and maps. Good practice and review.

Suter, Allan D. Number Sense, Fraction Multiplication & Division, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Basic operations with fractions; order of operations, word problems, approximations, selection of operations; good practice and review.

Suter, Allan D. Number Sense, The Meaning of Percent, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Basic functions using percents; conversions, equivalents; percent wheel; good practice and review.

Suter, Allan D. Number Sense, Percent Applications, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Graphs, one-step equations, word problems, selection of operations, approximations, conversions; practical applications - money, budgeting, commissions, discounts, sports averages. Easy to understand and helpful.

Suter, Allan D. Number Sense, Decimal Addition & Subtraction, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Word problems, basic functions with decimals, place value, zero as a place holder, selection of operations; practical applications - money, weights, menus, discounts, rate of pay.

Suter, Allan A. Number Sense, Decimal Multiplication & Division, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Word problems, place value, one and two-step equations, zero as a place holder, selection of operations; practical applications -- money, weights, menus, discounts, rate of pay. Simple explanation of the meaning of decimals.

Suter, Allan D. Number Sense, Ratio & Proportion, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1990.

Meaning of a ratio, ratio application, unit rates, measurement ratios, word problems, meaning of a proportion, proportions with fractions and decimals, proportion problem solving. Simple explanations and extensive practice.

Tamarkin, Kenneth. Number Power 6, Word Problems, Contemporary Books, Inc., 180 No. Michigan Ave., Chicago, IL, 1991.

Basic number operation with whole numbers, fractions, decimals and percents; proportion; conversions; practice with graphs, area, perimeter, volume; algebraic concepts, one and two-step equations ratio and proportion, place value, zero as place holder, selection of operations; practical applications - budgets, sewing, recipes, dimensions, thermometers, schedules, mileage, calendars, menus.

EDUCATIONAL DESIGN, INC.

Mosenfelder, Donn. Life Skills Math, Educational Design, Inc., 47 West 13th Street, New York, NY, 1991.

Mosenfelder, Donn. Life Skills Math 2, Exercise Supplement, Educational Design, Inc., 47 West 13th Street, New York, NY, 1990.

Very simple explanations. Practical applications - money, measurement, decimals, fractions, percentages, lowest unit price.

Parsky, Larry. Math for Employment, Basic Money Skills, Educational Design, Inc., 47 West 13th Street, New York, NY, 1991.

Converting currency, value of money, all money problems.

FEARON EDUCATION

Tappay, Robert and Weber, Ken. Career Math Makes Sense, Fearon Education, a division of David S. Lake Publishers, 500 Harbor Blvd., Belmont, CA, 1986.

Practical math usage. Fractions and decimals in money, practice with measurement, geometric shapes, algebra, sales tax, profit, liquid measure, scales, interest formulas, commissions, dimensions, thermometers, calendars, schedules, time, mileage, maps, coordinates, checkbooks, calculators, sales bills, rate of pay, correct change, discounts, unit price, tree diagrams, venn diagrams, capacity, patterns, charts. Notable for good practical usages.

G & G PUBLISHERS, INC.

Gatje, John F. and Gatje, Charles T. A Map for Whole Numbers, G&G Publishers, Inc., #63, Route 7, Hopewell Junction, NY, 1985.

Basic functions with whole numbers. Good explanation of multiplication with zero, good practice.

Gatje, John F. and Gatje, Charles T. A Map for Decimals, Student Worktext, G&G Publishers, Inc., 2 Americana Boulevard, Hopewell Junction, NY, 1991.

Basic functions with decimals, rounding, comparing. Good explanations of what decimals are, some practice.

Gatje, John F. and Gatje, Charles T. A Map for Fractions, Student Worktext, G&G Publishers, Inc., 2 Americana Boulevard, Hopewell Junction, NY, 1992.

Basic functions with fractions, simplifying, conversions. Good examples and lots of practice.

Gatje, John F. and Gatje, Charles T. A Map for Ratio, Proportion and Percent, Student Worktext, G&G Publishers, Inc., 2 Americana Boulevard, Hopewell Junction, NY, 1992.

Word problems, signed numbers, powers, conversions. Lots of practice.

Gatje, John F. and Gatje, Charles T. Geometry & Measurement, Student Worktext, G&G Publishers, Inc., 2 Americana Boulevard, Hopewell Junction, NY, 1991.

Word problems, geometric functions, signed numbers, powers, pythagorea formula, ratio and proportion, coordinates, conversions. Good examples and practices.

Gatje, John F. and Gatje, Charles T. A Map for Algebra-1, Student Worktext, G&G Publishers, Inc., 2 Americana Boulevard, Hopewell Junction, NY, 1991.

Word problems, signed numbers, writing algebraic expressions, substitutions, one and two-step equations, conversions. Good explanation of signed numbers.

GLOBE BOOK COMPANY

Goltry, M. Forms in Your Future, Globe Book Company, Inc., New York, 1987.

A practice book in filling out forms of every kind. Each form is preceded by an explanation of the form, and a list of words and phrases that are on the form that might need special consideration and some hints and help to use before completing the form.

HARPERCOLLINS PUBLISHERS, INC.

Steffensen, Arnold R. and Johnson, L. Murphy. Fundamentals of Mathematics, Third Edition, HarperCollins Publishers Inc., 1991.

Basic number facts, practice with geometric facts, roots, order of operation, practice with algebraic expressions, equations, ratio and proportion, inequalities; geometric concepts; selection of operation; practice with fractions, practical applications in dimensions, measurement, practice tests.

MEDIA MATERIALS, INC.

Miller, Bert. Mathematics for Business and Mathematics in Business, Student Workbook, Media Materials, Inc., 2936 Remington Ave., Baltimore, MD, 1987.

Gross pay, overtime, rounding money, commission, real estate tax, sales tax, filling out tax forms, life insurance, auto insurance, stocks, simple life insurance, auto insurance, stocks, simple and compound interest, bonds, percents in business, retail sales, cost of production, depreciation, inflation, consumer price index, credit card charges, the 24-hour clock, time zones, units of measure and conversion. Extensive drill and practice. Hardback book.

SCOTT, FORESMAN AND COMPANY

Usiskin, Zalman; Flanders, James; Hynes, Cathy; Polonsky, Lydia; Porter, Susan; Viktora, Steven. Transition Mathematics, Scott, Foresman and Company, Glenview, IL, 1990.

Our reviewer thought this book was too advanced for middle level adult students.

SIMON & SCHUSTER, INC.

Meyer, Robert J. Consumer and Business Mathematics, Simon & Schuster, Inc., 15 Columbus Circle, New York, NY 1982.

Covers lots of day to day reasons why math is important -- taxes, mortgages, invoices, balanced checkbooks. Good book for practical applications, but need additional texts as supplement.

STECK-VAUGHN COMPANY

Bryant, Nerissa Bell and Hedgepeth, Loy. Mathematics in Daily Living, Book 1, Fractions, Steck-Vaughn Company, Austin, TX, 1985.

Word problems, place value, Roman numerals, reducing fractions; practical applications - measurement, recipes, lowest unit price, income tax form. Good examples and practices - usually shows a practical application after each topic.

Bryant, Nerissa Bell and Hedgepeth, Loy. Mathematics in Daily Living, Book 2, Decimals and Percent, Steck-Vaughn Company, Austin, TX, 1985.

Zero as a place holder, money, practical applications - interest, checkbooks, rate of pay, discounts, insurance premiums. Lots of good examples and practices - usually shows a practical application.

Bryant, Nerissa Bell and Hedgepeth, Loy. Mathematics in Daily Living, Book 3, Measurement and Geometry, Steck-Vaughn Company, Austin, TX, 1985.

Word problems, measurement, signed numbers, powers, one and two-step equations.

Bryant, Nerissa Bell and Hedgepeth, Loy. Mathematics in Daily Living, Book 4, Fundamental Algebra, Steck-Vaughn Company, Austin, TX, 1985.

Word problems, signed numbers, powers, algebraic expressions, one and two-step equations.

Lassiter, Karen. Math Matters for Adults, Whole Numbers, Steck-Vaughn Company, Austin, Tx, 1993.

Basic functions with whole numbers, rounding, zero as a place holder, word problems, approximations, place value. Good practice, lots of problems with answers.

Lassiter, Karen. Math Matters for Adults, Fractions, Steck-Vaughn Company, Austin, TX, 1993.

Basic functions with fractions, reducing, comparing. Good practice and good explanations.

Lassiter, Karen. Math Matters for Adults, Decimals and Percents, Steck-Vaughn Company, Austin, TX, 1993.

Basic functions with decimals and percents. Percent wheel, conversions, money, comparing, values, ratio and proportion. Good practice and explanations. Notable for its discussion of percents.

Pre-Ged Mathematics, Steck-Vaughn Company, Austin, TX, 1992.

Basic facts, place value, graphs and tables, geometric functions, estimating, powers, roots, order of operation, ratio and proportion, zero as a place holder conversions, fractions, decimals, money, word problem; practical applications - measurement, interest, charge cards, time, mileage and maps, commissions, rate of pay, discounts, probability.

Richardson, Hope E. Mathematics Skill Book 8800, Solving Word Problems, Steck-Vaughn Company, Austin, TX, 1991.

Solving word problems involving whole numbers, decimals, fractions, percents, customary and metric conversions, charts, bar graphs, line graphs, geometric formulas such as area and volume, ratio and proportion. Finding sub-steps for each type, and work with equations. Lots of practice.

Shea, James T. Basic Essentials of Mathematics, Book 1, Whole Numbers, Fractions & Decimals, Steck-Vaughn Company, Austin, TX, 1991.

Basic functions plus graphs, geometric functions, signed numbers, powers, roots, order of operations, exponents, rounding, word problems, approximations, estimating, interest. Good examples, lots of practice.

Shea, James T. Basic Essentials of Mathematics, Book 2, Percent, Measurement & Formulas, Equations, Ratio & Proportion, Steck-Vaughn Company, Austin, TX, 1991.

Basic functions plus writing algebraic expressions one and two-step equations, ratio and proportion, geometric formula, conversions, equivalents, reducing, interest, charge cards, commissions, discounts, distance. Good examples, lots of practice.

Shea, James T. Working with Numbers, Level E, Steck-Vaughn Company, Austin, TX, 1990.

Comparing, ordering, rounding, basic functions with whole numbers, fractions, decimals; problem-solving strategies; rounding, estimation, place value, equivalent fractions, reducing, conversions, measurement, graphs.

Shea, James T. Mathematics Skill Book 5500, Fractions, Steck-Vaughn Company, Austin, TX, 1991.

Practice book with basic functions and whole numbers - multiplication, division, addition and subtraction; zero as a place holder, rounding.

Shea, James T. Mathematics Skill Book 6600, Fractions, Steck-Vaughn Company, Austin, TX, 1991.

Practice book of basic functions with fractions, including mixed numbers and improper fractions.

Shea, James T. Mathematics Skill Book 7700, Decimals and Percents, Steck-Vaughn Company, Austin, TX, 1991.

Practice book of basic functions with decimals and percents - conversions, rounding, word problems, interest and charge cards.

Shea, James T. Working with Numbers, Level F, Steck-Vaughn Company, Austin, TX, 1990.

Place value, comparing and ordering, rounding; basic functions with whole numbers, fractions, decimals; measurement; zero as a place holder, word problems, selection of operation, estimation; equivalent fractions.

Strategies for Success, Mathematics, Pre-GED, Steck-Vaughn Company, Austin, TX, 1987.

Strategies for problem solution. Measurement, basic functions, selection of operation, word problems, conversions, decimals and fractions, money.

Watkins, H. Lewis. Practical Math, Book 1, Steck-Vaughn Company, Austin, TX, 1982.

Basic functions, word problems, graphs, tables, measurement, signed numbers, powers, roots, word problems; practical applications - budgeting liquid measure, interest, time, sales bills. Mostly practice problems, but not much explanation.

Watkins, H. Lewis. Practical Math, Book 2, Steck-Vaughn Company, Austin, TX, 1982.

Basic functions, word problems, graphs, tables, measurement, signed numbers, powers, roots, algebraic functions, one and two-step equations, geometric functions, conversions, fractions, decimals, practical applications. Not much explanation - lots of practice.

Watkins, H. Lewis. Practical Math, Word Problems, Steck-Vaughn Company, Austin, TX, 1985.

Graphs, tables, addition, subtraction, decimals, multiplication, division, conversions, multiple step problems, fractions, percents, geometric shapes and terms, perimeter, area, circumference, volume, multi-step word problems, negative number problems, solving algebraic expressions, ratio and proportions. Extensive practice.

APPENDIX D

PERCENTAGE OF RESPONDENTS WHO ANSWERED QUESTION INCORRECTLY

MATH CONCEPT		
1.	Identify a fractional part of a number	73%
2.	Convert a common fraction to a decimal fraction	73%
3.	Express the shaded portion as a common fraction	73%
4.	Convert a percent to a common fraction	67%
5.	Identify the expanded form of a number expressed in exponential form	61%
6.	Identify the prime factorization of a number	58%
7.	Recognize zero as the addition identity	48%
8.	Read a five-digit numeral	39%

COMPUTATION

Add two common fractions with unlike denominators	100%
Given the percent and the percentage, find the base	97%
Multiply a 3-digit number by a 3-digit number (using zero)	93%
Solve a linear equation	90%
Divide a 4-digit number by a 2-digit number	88%
Divide a common fraction by a whole number	85%
Divide a mixed decimal by a decimal fraction	83%
Subtract a 4-digit number from a 4-digit number	82%
Solve a common power	80%
Multiply two common fractions	79%
Multiply two decimals, each expressed in hundredths	70%
Divide a 4-digit number by a 2-digit number - twice	70%
Add three 3- and 4- digit numbers	67%
Multiply a 3-digit number by a 2-digit number	67%
Divide a 4-digit number by a 2-digit number	67%
Subtract two decimals expressed as dollars and cents, expressed in horizontal form	67%
Find the percentage of a number, percent less than 100%	67%
Divide a 5-digit number by a 2-digit number (w. zero)	64%
Add three decimals expressed as dollars and cents	64%
Subtract a common fraction from a mixed fraction each with a different denominator	61%
Multiply a 4-digit number by a 2-digit number (w. zero)	58%
Subtract two common fraction with unlike denominators	58%
Multiply a 3-digit number by a 3-digit number	57%
Multiply a 3-digit number by a number less than 10 (w.zero)	52%
Multiply a 2-digit number by a 2-digit number	52%
Divide a 4-digit number by a number less than 10	48%
Add two mixed fractions with unlike denominators	47%

Add two decimals expressed as dollars and cents, presented in horizontal form	45%
Subtract a 3-digit number from a 4-digit number	42%
Add three 2-digit numbers	39%
Add four 2- and 3- digit numbers	0%

APPENDIX F

WORKING WITH YOUR MATH STUDENT

Monday, May 3 7:00 - 9:00 pm Bethel Park
or
Friday, May 7 10:00 - 12:00 Squirrel Hill

Ellen McDevitt of the **South Hills Literacy Improvement Center** has been testing student math abilities this year in an effort to find out what specific competencies we need to address in our teaching.

Ellen has developed a Tutor Training Session based on the results of the testing. She will address the specific competencies that are most needed by the students, and she will share strategies for teaching these competencies. An annotated bibliography of math books for students at the 4 - 8 grade levels will be available to all participants and samples of the books will be available for review.

If you would like more information or directions to either workshop, please do not hesitate to call Ellen at (412) 854-8415 or Paul Weiss at 1-800-438-2011.

REGISTRATION
Working With Your Math Student

Name _____

Program _____

Phone No. _____

Please register by
April 29, 1993

Send to:
Paul Weiss
GPLC
100 Sheridan Sq. 4th Fl.
Pittsburgh, PA 15206

EVALUATION FORM

WORKING WITH YOUR MATH STUDENT

We would like you to share your reactions, both positive and negative, about this workshop and its usefulness to you as a math tutor. Please take a few moments to answer the following questions. Thank you.

Please circle one number per line.

HOW DID THIS WORKSHOP RATE IN TERMS OF:

	Poor	Fair	Average	Good	Excellent
New techniques to use in working with your math student.	1	2	3	4	5
New ideas to consider when devising instruction for your student.	1	2	3	4	5
Information on new materials available.	1	2	3	4	5
Practical help in working with your student.	1	2	3	4	5
Providing insight into the needs of your student.	1	2	3	4	5

WHAT DID YOU LIKE BEST ABOUT THIS WORKSHOP?

WHAT COULD BE DONE TO IMPROVE THIS WORKSHOP?

DID THIS WORKSHOP ADDRESS WHAT YOU THOUGHT IT WOULD?

WHAT KIND OF LITERACY ACTIVITY ARE YOU INVOLVED IN?

____volunteer tutor _____clerical worker_____administrator

____ teacher _____student_____other

APPENDIX E

WORKING WITH YOUR MATH STUDENT

by

ELLEN MC DEVITT
ASSOCIATE DIRECTOR
NEW CHOICES FOR ADULT LITERACY

353 Contract No. 099-3013

This workshop is the result of a project funded by federal funds administered by the Pennsylvania Department of Education.

THE SURVEY

SEPTEMBER, 1992 THROUGH JANUARY, 1993

In the fall of 1992, nearly 100 students in Allegheny County were tested using the ABLE 2. All students were participating in literacy programs and were supposed to be operating at the 5-8 grade level of ability. The following three pages identify specific math concepts and computational skills, and present the results of the tests according to the number of respondents who answered the questions incorrectly. The fourth page, Specific Math Competencies--by Function, identifies those competencies most needed by respondents in each of 6 categories.

PERCENTAGE OF RESPONDENTS WHO ANSWERED QUESTION INCORRECTLY

MATH CONCEPT		
1.	Identify a fractional part of a number	73%
2.	Convert a common fraction to a decimal fraction	73%
3.	Express the shaded portion as a common fraction	73%
4.	Convert a percent to a common fraction	67%
5.	Identify the expanded form of a number expressed in exponential form	61%
6.	Identify the prime factorization of a number	58%
7.	Recognize zero as the addition identity	48%
8.	Read a five-digit numeral	39%

COMPUTATION

Add two common fractions with unlike denominators	100%
Given the percent and the percentage, find the base	97%
Multiply a 3-digit number by a 3-digit number (using zero)	93%
Solve a linear equation	90%
Divide a 4-digit number by a 2-digit number	88%
Divide a common fraction by a whole number	85%
Divide a mixed decimal by a decimal fraction	83%
Subtract a 4-digit number from a 4-digit number	82%
Solve a common power	80%
Multiply two common fractions	79%
Multiply two decimals, each expressed in hundredths	70%
Divide a 4-digit number by a 2-digit number - twice	70%
Add three 3- and 4- digit numbers	67%
Multiply a 3-digit number by a 2-digit number	67%
Divide a 4-digit number by a 2-digit number	67%
Subtract two decimals expressed as dollars and cents, expressed in horizontal form	67%
Find the percentage of a number, percent less than 100%	67%
Divide a 5-digit number by a 2-digit number (w. zero)	64%
Add three decimals expressed as dollars and cents	64%
Subtract a common fraction from a mixed fraction each with a different denominator	61%
Multiply a 4-digit number by a 2-digit number (w. zero)	58%
Subtract two common fraction with unlike denominators	58%
Multiply a 3-digit number by a 3-digit number	57%
Multiply a 3-digit number by a number less than 10 (w.zero)	52%
Multiply a 2-digit number by a 2-digit number	52%
Divide a 4-digit number by a number less than 10	48%
Add two mixed fractions with unlike denominators	47%

Add two decimals expressed as dollars and cents, presented in horizontal form	45%
Subtract a 3-digit number from a 4-digit number	42%
Add three 2-digit numbers	39%
Add four 2- and 3- digit numbers	0%

SPECIFIC MATH COMPETENCIES - BY FUNCTION

Addition

1. more than 2 2-digit numbers
2. horizontally
3. decimals expressed as dollars and cents
4. common fractions with unlike denominators
5. two mixed fractions with unlike denominators

Subtraction

1. 3 digits from 4 digits; 4 digits from 4 digits
2. two common fractions with unlike denominators
3. a common fraction from a mixed fraction, each with different denominator
4. two decimals expressed as dollars and cents, in horizontal form

Multiply

1. 2 digits by 2 digits; 3 digits by 3 digits; 3 digits by 2 digits
2. 3 digits by a number less than 10, with zero
3. 4 digits by 2 digits, with zero
4. 2 decimals, each expressed in hundredths
5. 2 common fractions
6. 3 digits by 3 digits, with zero

Divide

1. 4 digits by a number less than 10
2. 5 digits by 2 digits, with zero
3. 4 digits by 2 digits
4. a mixed decimal by a decimal fraction
5. a common fraction by a whole number
6. 4 digits by 2 digits

Percentages

1. find the percentage of a number
2. given percent and percentage, find the base

Other

1. solve a linear equation
2. solve a common power

EFM:ljk
3/3/93

Components Essential for Effective Instruction in Math

After reviewing the results of the testing, reviewing textbooks available for math instruction, and reviewing literature on adult education, several components for effective instruction in mathematics were identified.

1. The skills presented must be practical and relevant to the adult student.

* use terms that have real meaning, not math terms

* make your student contribute to the selection of concrete, real experiences

* develop different strategies for different students

2. Entry behaviors are not important

* don't assume that your student really understands the fundamental concepts of math

* begin at the same point with all students, regardless of what you think they know

* students need help in understanding the problem so they can apply the skills they learn

3. Math is a statement of realtionships and the relationships need to be thoroughly understood.

* translate number relationships to the concrete level and have students work at that level

* try working without pencils so the students can understand the problem

* most problems can be solved in more than one way--allow your students to figure out their way

* most problems can be solved in more than one way--allow your students to figure out their way

* strategies for developing number sense are the key to successful skill building

4. We can only do four things with numbers--add, subtract, multiply and divide.

* students need to understand the concepts of math

* the student needs to understand that competency in math is achievable and the amount of information is manageable

5. Adults want to solve problems, not learn skills

* make the concepts and skills meaningful be relating them to student needs

* apply new knowledge to what the student already knows

* find real applications for abstract concepts

I hear and I forget
I see and I remember
I do and I understand

Sequential Outline

for

Teaching Math Skills

COMPUTATION - SINGLE DIGITS

1. Counting by 1, 2, 3, 5, 10, 100
   a. Ask what he/she is doing going from 1 to 2 and 2 to 3
   b. Same thing when counting by other numbers
   c. Do backwards
2. Adding
   a. Already understand strategy, i.e., adding is combining
   b. Show it with toothpicks (ask for other ideas)
   c. Use graph paper to illustrate that each number has a place.

Concept of the Equation - Teach This Concept Early

3. Subtracting
   a. Explain that subtracting means reducing (checking account)
   b. Use manipulatives - toothpicks, scale
   c. Use graph paper
4. Multiplying
   a. Explain that Multiplication is the repeated addition of the same number - refer back to skill of #1a
   b. Do it - in 5's - with toothpicks; with 2's, with 10's.
   c. Use graph paper

5. Dividing

   a. Explain that division is the repeated subtraction of the same number - refer to skill of #1c (MPG, unit pricing)

   b. Do it - toothpicks, MPG, unit pricing

   c. Division is dealing things out in equal quantities - use note cards to illustrate

   d. Use graph paper.

6. RELATIONSHIPS BETWEEN PROCEDURES

   a. Subtraction is the opposite of addition - one's the check for the other

   b. Multiplication is the opposite of division - one is the check for the other

   c. The commutative principle. i.e.

$$3 + 5 = 5 + 3$$
$$3 \times 5 = 5 \times 3$$
$$3 - 5 = 5 - 3$$
$$3 - 5 = 5 - 3$$

   d. When you multiply by 1, there is no change

   When you multiply by a number less than one,
   you get a decrease in the number

   When you multiply by a number greater than one,
   you get an increase in the number

   e. Show it by doing

COMPUTATION - MULTIPLE DIGITS

1. Teach place value here - use Place Value Grid to illustrate.

2. Use graph paper to assist student in keeping numbers in their places - one number to a square.

DO ALGEBRAIC CONCEPTS HERE

1. Stress that letters don't mean anything - they stand for the unknown
2. Stress the concept of the equation - both sides have to balance (use a scale to illustrate)
3. Finding for a letter means isolating that letter on one side of the equation
4. Be sure first problems are one-step problems:

$6 + ? = 9$	$5 + ? = 8$
$7 - ? = 3$	$5 - 5 + ? = 8 - 5$
$? - 5 = 4$	$0 + ? = 3$
	$? = 3$

EFM:ljk
4/1/93

USING THE PLACE VALUE GRID

The Place Value Grid is used with toothpicks or pennies and dimes to illustrate the concept of place value. Explain that each column can only contain 9 or the group that is represented there: nine ones in the first column on the right, nine groups of 10 in the next column, nine groups of 100 in the nex, and nine qroups of 1,000 in the next. Expand the grid as you need to include higher number groups.

Begin by having your student count out 9 toothpicks and place them one at a time in the ones column. When you get to 10 toothpicks, you have to gather up the first nine and remove them from the ones column, add the tenth toothpick to the original nine, bind them with a rubber band, and place the GROUP of 10 in the tens column. This becomes ONE group of TEN. Explain the the number 10 <u>says</u> that there are no ones, but there is <u>one group</u> of 10--show the concept on the grid until your student grasps what place value <u>means</u>. Continue bundling toothpicks in groups of 10 until you have 9 groups of 10 in the column and you are ready to add a tenth group. Because no column can contain any more than 9, you need to bundle up the 9 groups, add a tenth group and move all ten to the hundreds column. Explain that the number 100 <u>says</u> that there is nothing in the ones column, nothing in the tens column, but that there is <u>one group</u> of 100 in the hundreds column. Repeat the process up to the group of 1000 in the thousands column.

THOUSANDS	HUNDREDS	TENS	ONES	• DECIMAL POINT

ADAPTED FROM: PEG BERNSTEIN, MATH WITHOUT FEAR, A CONCRETE APPROACH TO MATHEMATICS; LUTHERAN SETTLEMENT HOUSE WOMEN'S PROGRAM, PHILADELPHIA, PA.

NUMBERS REPRESENTING QUANTITIES LESS THAN ONE

Fraction, decimals and percents all represent numbers that are less than one. This is the crucial concept to get across--that these numbers designate pieces or parts of a whole. Some students will be surprised to realize that fact--some will think they've never heard it before. But it is an essential concept to get across if your student is to understand the reasoning behind using fractions, decimals, and percents.

The following pages list suggestions of things to remember when teaching fractions, decimals, and percents. Remember to make the concepts real to your student. Following the explanatory sheets are a series of colored sheets marked off in rectangular shapes of different sizes. The purple sheet represents the whole. Other colors represent halves, quarters, thirds, and eighths. Have your student cut along the lines to form rectangles of different colors and then assist your student in placing those shapes into the shape of the whole. This exercise illustrates the concept that the same number has different names but that all the names mean the same thing: 1=2/2=3/3=4/4=8/8. Included with the grids are verbal exercises to use in understanding what the exercise is all about.

THINGS TO REMEMBER ABOUT TEACHING FRACTIONS

- Common fractions represent numbers less than 1
- The bottom number of a fraction tells how many equal parts something has altogether.
- The top number of a fraction tells how many of those parts you have
- Common fractions can be taught by showing their relevance in writing checks, in using recipes and in doing measurement.
- Some points to stress
    - reducing improper fractions
    - equivalent fractions, e.g.,3/4 and 12/16
    - the part is written over the whole
- Use manipulative and newspaper ads to teach fractions and make them relevant.

THINGS TO REMEMBER ABOUT TEACHING DECIMALS

- Decimals represent numbers less than 1

- Decimals express parts of 1 by using a decimal point to divide parts of the whole from the whole. Numbers to the right are parts of the whole, numbers to the left are whole numbers.

- American money is the most common form of decimal math. Show how a penny is related to a dollar: a dollar can be divided into 100 parts each part is 1 of the 100 parts or 1/100. Another way to write 1/100 is .01, which is how you write 1 cent.

- Remember place value before and after the decimal.

- Work on expressing the numbers verbally, writing the number that is expressed. For example, .6 is six tenths, while 60 represents 6 tens.

- Be sure to align decimals when adding and subtracting.

- Be sure to count places when multiplying decimals.

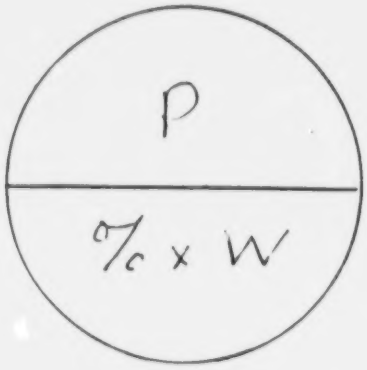
BEST COPY AVAILABLE

THINGS TO REMEMBER ABOUT TEACHING PERCENTAGES

- Percents represent numbers less than 1

- The term percent means "hundredths" of the whole

- Problems using percents ask you to find:
  a. the part of a whole
  b. the percent that a part is of a whole
  c. the whole when you know the part



The Percent Wheel
P = the part
% = the percent
W = the whole
the line represents the process of division

- To find the part, multiply the % by the whole
- To find the %, divide the part by the whole
- To find the whole, convert the percent to a decimal and divide the part by the converted percent.

FORMS FOR

- THE WHOLE

- HALVES

-THIRDS

-FOURTHS

-EIGHTHS

VERBAL EXERCISES FOR FRACTIONAL PARTS OF A WHOLE

1. Which piece fills the box all by itself? This is the whole piece.

2. Which two pieces fill the box completely? What do we call each of those two pieces?

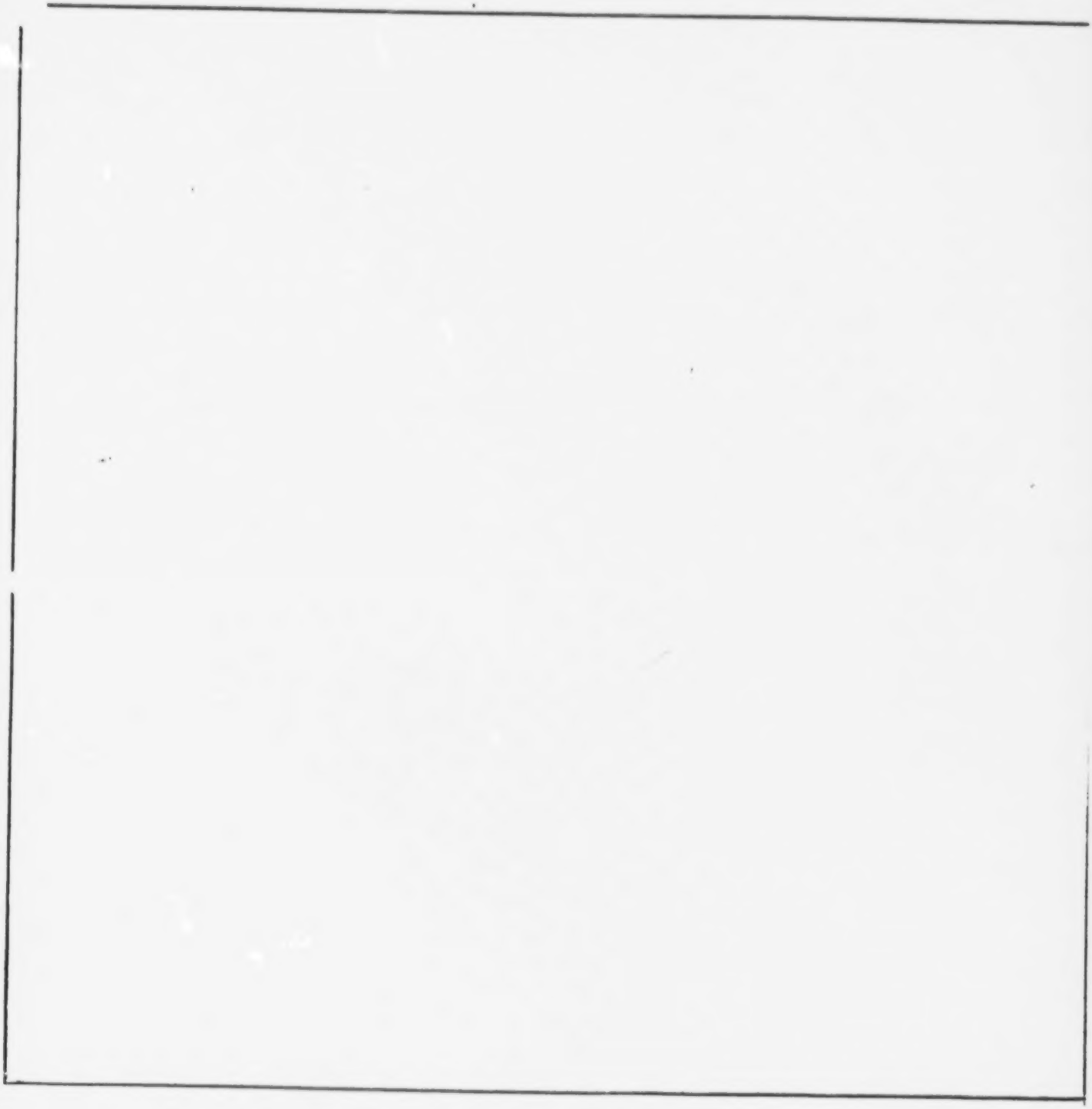
3. Are there three pieces that fill the box completely, with no space remaining? What re each of the three pieces called?

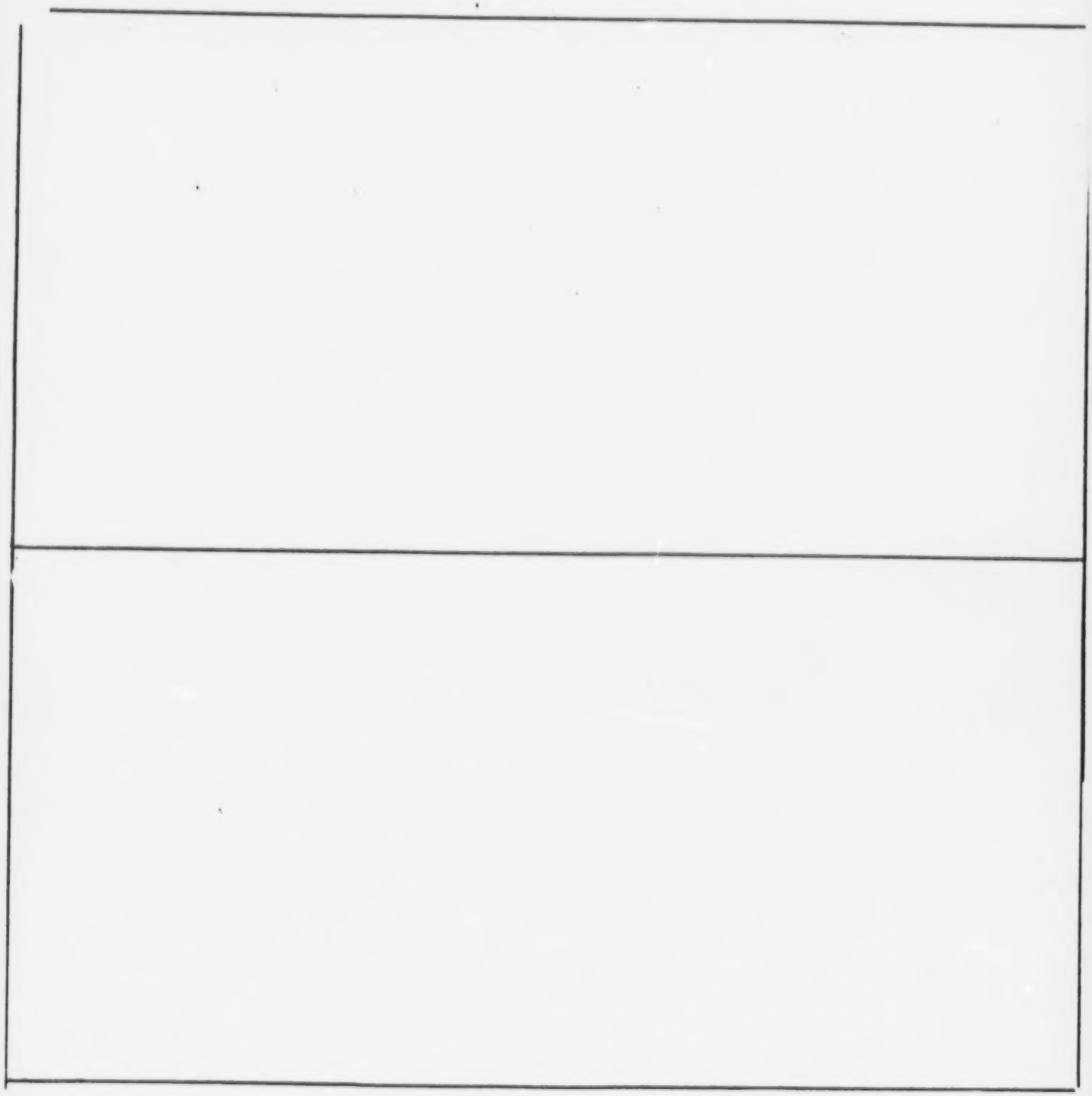
4. Find four pieces to fill the box completely. What do we call each of the four pieces? If we put two of the four pieces together, do we call them by another name? (Be sure the student looks at the space being occupied by the two pieces) If we count three of the four pieces, how much do we have? Do we have the whole yet? How many pieces do we need to have a whole? How do you write that number?

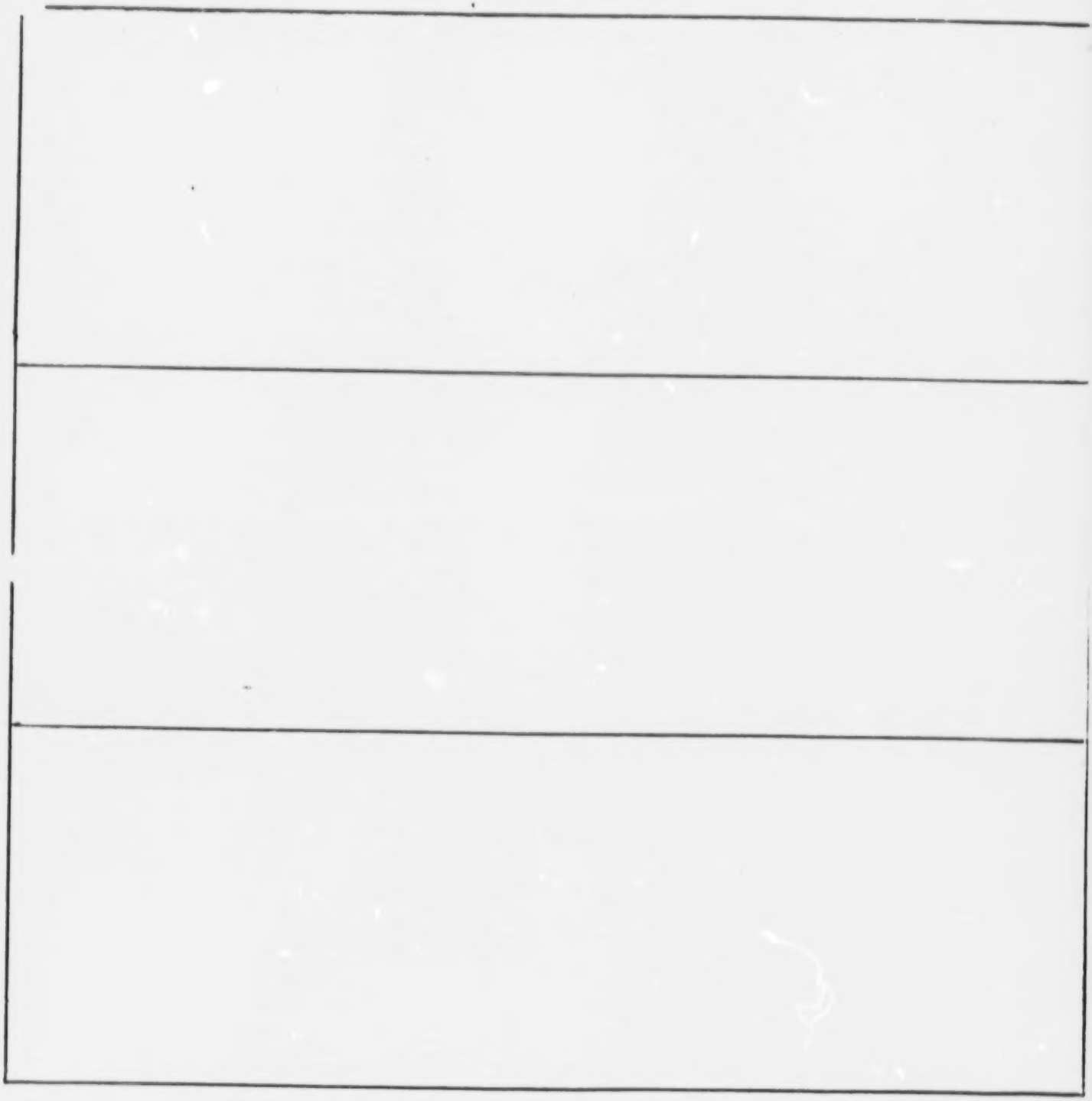
5. Repeat #4 with 8 pieces.

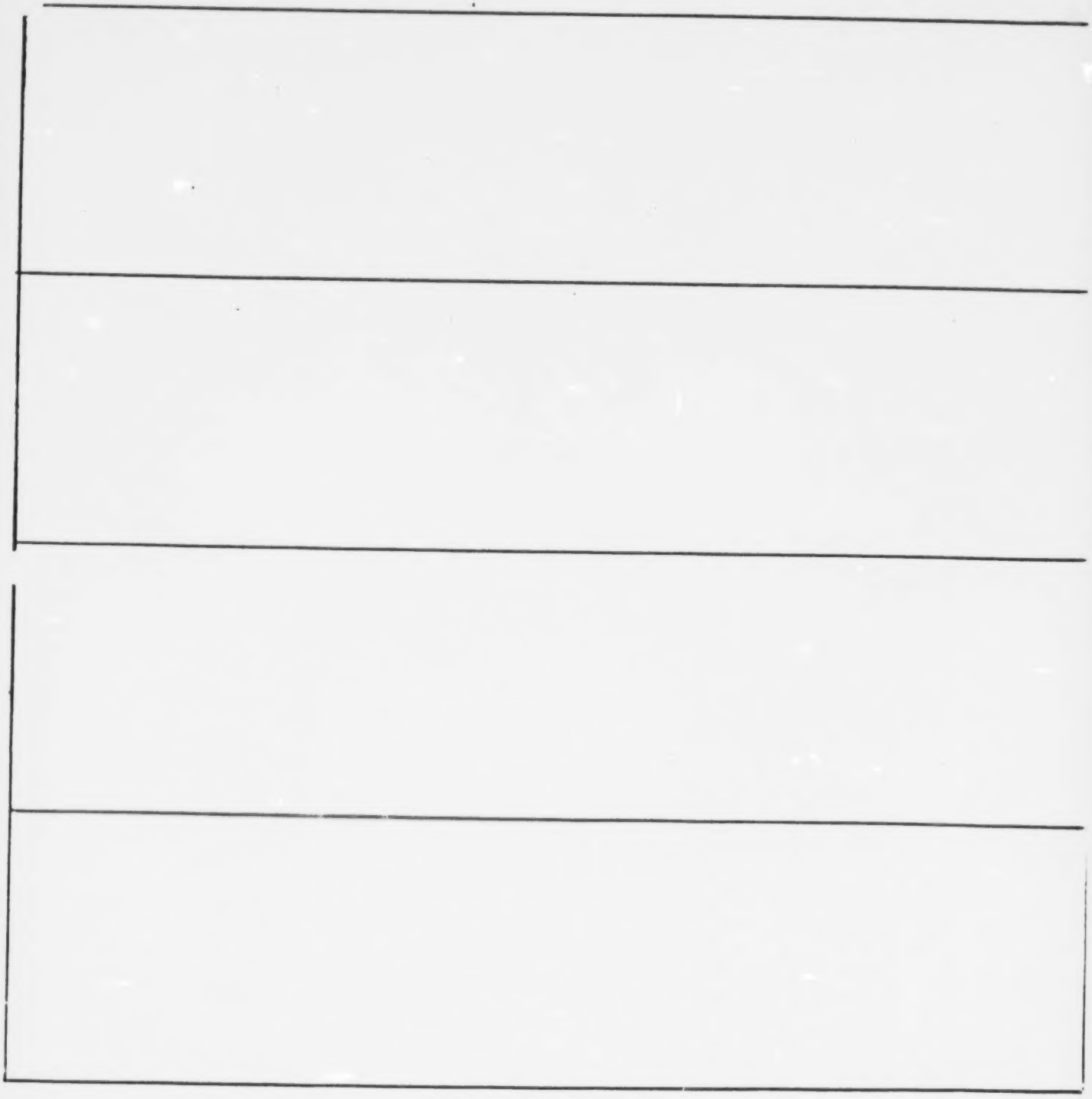
6. Give the student 6 pieces that each represent 1/4. Direct the student to fill the box. Explain that 4/4 is still the whole. If 4 quarters represent "one", what do 6 quarters represent? (Repeat using other fractions if necessary for understanding.)

7. Give the student 10 pieces that each represent 1/4. Direct the student to fill the box. (Student will fill 2 boxes and have 2 left over). You have redefined the whole. Explain . If 4 quarters equal "one" or a whole, what do 8 quarters equal? Do it using the boxes. What do 10 quarters equal? What would 11 quarters equal?









BEST COPY AVAILABLE

PROBLEM SOLVING STRATEGIES

Picture the Problem

Make a graph or chart
Close your eyes and try to see it
Draw a picture or a diagram
Draw groups to illustrate similarities and differences

Redo the Problem

Put it in your own words
Relate it to another problem you've already done
Translate key words to math symbols
Use simpler numbers to get the idea, then replace them with the original numbers

Examine the Problem

What are they asking for, what information do they give me
Does it provide enough information - does it give too much information
Break down the large problem into smaller problems
Look for the key words

Other Ideas

Estimate
Predict
Talk out loud to yourself
Ask yourself questions
Check your computation
Use a calculator to check
Use "things" to help figure it out - rulers, measuring cups, money, etc.

EFM:ljk
4/1/93

PROBLEM SOLVING STRATEGIES

EQUATIONS:	use a scale to illustrate picture it replace numbers with simple numbers use simple objects to balance sides, e.g., toothpicks, coins
WORD PROBLEMS:	omit numbers, answer questions, work backward write a question make a list replace numbers with simple numbers see "5-Steps to Solve Word Problems" create a form and fill in (see Contemporary's form) student creates his/her own word problems
FRACTIONS:	define the whole separate into equal parts create colored pieces for fractional parts (see forms) use student interest to select a manipulative
NEGATIVES:	use commonly understood concepts: thermometer; underground parking garage; a bounced check; the difference between a mountain and a valley, draw a chart using graph paper and a number line at -0- use logical reasoning/deduction

KEY WORDS

Subtraction	Addition
Less than	Sum
More than	Plus
Decrease	Add
Difference	And
Reduce	Total
Lost	Increase
Left	More
Remain	Raise
Fell	Both
Dropped	Combined
Change	In all
Nearer - other -er comparison words	Altogether
Farther	Additional

Multiplication	Division
Multiplied	Divided (evenly)
Times	Split
Total	Each
Of	Cut
Per	Equal pieces
As much	Average
Twice	Every
By	Out of
Area	Ratio
Volume	Shared

THINGS TO REMEMBER ABOUT TEACHING WORD PROBLEMS

- Word problems are just reading problems with numbers.
- Use the 5-Steps to Solving Word Problems to help your student understand the process.
- Use the Key Words to help identify what procedure is called for, but remember that you may not see the exact word always.
- Use the sheet of Sample Problems to help identify specific kinds of word problems - and then have the student make up some of her own in every category.
- Use everyday, practical examples from newspapers and magazines to make up word problems for your student.
- Remember to stress the following kinds of problems: Set-up problems, graphics and data analysis, ratio and proportion, fractions, decimals, and percentages.

THE FIVE STEPS USED TO SOLVE WORD PROBLEMS

1. What does the problem ask you to find? Does the problem give you enough information to solve it? Be specific, check the key words.

2. Some of the information in the problem is unnecessary. Decide which information you need to solve the problem. Write it down.

3. Check the key words again to decide what operation is called for.

4. Solve the problem using the operation you identified.

5. Check to see if the answer you got makes sense - double check you math first, then insert your answer into the problem.

EFM:ljk
4/1/93

CHECK SHEET FOR WORD PROBLEMS

Draw a picture
Key Words
Read it without numbers first
Read question in parts - be sure you understand each part - draw picture
Rephrase the problem - personalize it
Use simpler numbers
Select an operation - use Key words, is answer higher or lower than number given
Re-read the problem
Steps - which step is missing, break it into smaller steps
Order of operation - My Dear Aunt Sally
Select necessary information
Estimate/round
Check solution by reviewing operation

Steps:

1. What does it ask me to find?
   - Read without numbers
   - Key Words
   - Rephrase It

2. Decide what information is necessary to answer the question.
   - Rephrase it
   - Picture it
   - Read it in parts
   - Select information

3. Choose the operation
   - Key words
   - Which step is missing
   - Is all information there

4. Solve it
   - Steps
   - Order of operation
   - Estimate/round

5. Check the answer
   - Estimate/round
   - Reverse operation
   - Check for sense

PRACTICAL APPLICATIONS

MANIPULATIVES

ruler
tape measure
nails/toothpicks/poker chips
fabric - measurement, conversion
measuring cup, spoons, bowl
money - real, play
milk gallon - volume

sack of flour - weight conversion
recipes/cookbook - conversion, measurement
laundry detergent - measurement

gasoline pump - mpg
pieces of lumber - linear measurement
bank ad - percentages
restaurant bill - percentage
restaurant menu - addition, division
size chart from a catalog - reading charts
size chart from a pattern - find information
roll of tape - linear measurement
roll of wallpaper - area

hershey bar - fractions

TOPICS FOR CONSUMER APPLICATIONS

MONEY

1. Adding cost of purchases
2. Making change
3. Rounding/estimating cost
4. Figuring sales tax, discounts and interest
5. Comparing prices: newspapers, catalogs
6. completing food stamp, social service application forms
7. Opening a bank account
8. Using checks (good for illustrating concept of negatives)
9. Figuring paycheck deductions
10. Setting budgets
11. Figuring unit pricing for comparison shopping

TIME

1. Reading clocks (not digital clocks), calendars
2. Keeping time sheets
3. Figuring time and pay

WEIGHT

1. Learning the terms: English and metric
2. Reading scales: English and metric
3. Doing a weight-loss chart
4. Weighing produce - figuring cost

LENGTH AND AREA

1. Learning the terms: English and metric
2. Doing math operations with inches and yards (square inches and yards)
3. Figuring areas and amount needed for wallpaper, paint, rugs, material for curtains
4. Figuring mileage per gallon

RECIPES

1. Changing amounts
2. Becoming familiar with measurements
3. Equivalent measures

TEMPERATURE

1. Reading thermometers
2. Estimating equivalences, Fahrenheit, Celsius

CHARTS, TIMETABLES, SCHEDULES, MAPS

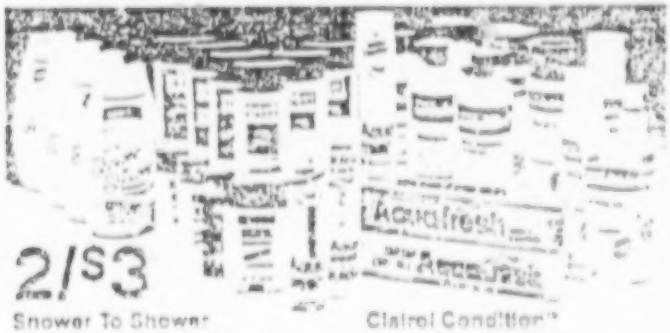
1. Reading them
2. Figuring mileage
3. Making charts and graphs
4. Bus schedules
5. Tax tables
6. Insurance tables - weight/height

4.99 each
Extra-Strength Tylenol
100 ct. Caplets or Tablets

6.99 each
Bufferin Tri-Buffered Aspirin
200 ct. Tablets
Mineral Ice 16 oz.

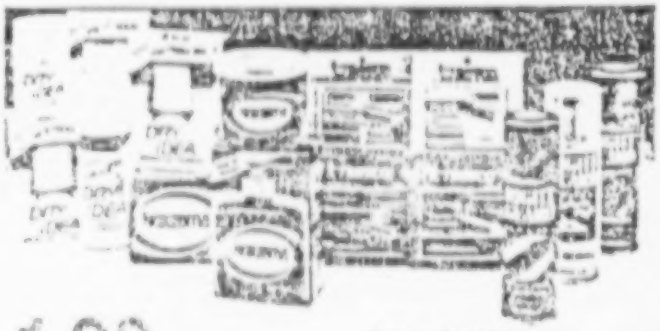
Ordering and comparing information, money, percentages and decimals, conversion

- Which is the best buy, Bufferin or Tylenol?
- You need deodorant. Which is the better buy?
- How much better is the better buy -- in actual money, in percent?



Shower To Shower
Deodorant Body Powder
8 oz. All scents
Mennen
Men's Speed Stick Deodorant
2.7 oz. All scents
Right Guard Stick
• 2 oz. Anti-Perspirant & Deodorant All scents
• 2.5 oz. Deodorant All scents

Clairol Condition®
Hair Care Products
Shampoo, Conditioner, Hair Spray, Mousse, Setting Gel
Aqua-Fresh Toothpaste
• 6.4 oz. Regular or 6 oz. Tartar Control Tube
• 4.6 oz. Regular or 4.4 oz. Tartar Control Pump



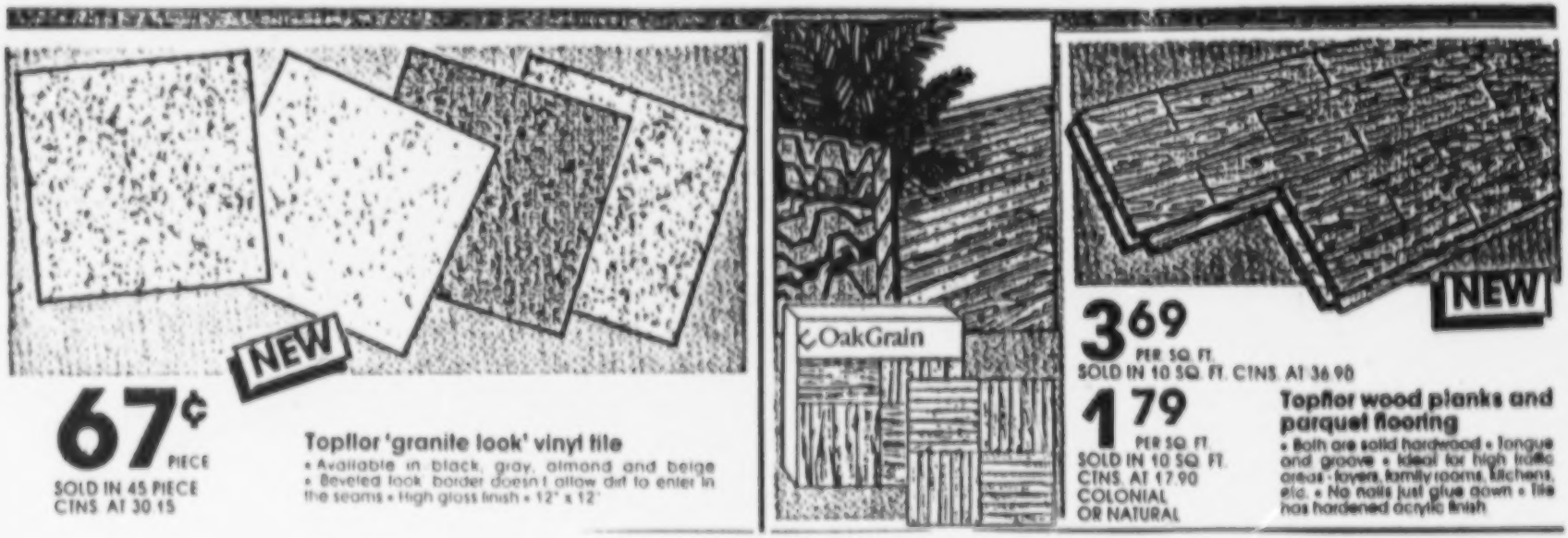
1.99 each
Dry Idea
Anti-Perspirant & Deodorant
• 1.6 oz. Roll-On All scents
• 1.75 oz. Stick All scents
• 4 oz. Spray All scents
Noxzema Skin Cream
10 oz. Jar or 10.5 oz. Pump

Reveo Cartridges
• 10 ct. Twin Blades or Twin Blades Plus
• 10 ct. Pivoting or Pivoting Plus
Right Guard Spray
• 5 oz. Deodorant All scents
• 4 oz. Anti-Perspirant & Deodorant All scents

BEST COPY AVAILABLE

For the best selection of flooring styles shop Hechinger!

WE'RE A STEP ABOVE THE OTHERS!


NEW
67¢ PIECE
SOLD IN 45 PIECE CTNS. AT 30.15
Topflor 'granite look' vinyl tile
• Available in black, gray, almond and beige • Beveled look border doesn't allow dirt to enter in the seams • High gloss finish • 12" x 12"
OakGrain
NEW
3.69 PER SQ. FT.
SOLD IN 10 SQ. FT. CTNS. AT 36.90
1.79 PER SQ. FT.
SOLD IN 10 SQ. FT. CTNS. AT 17.90
COLONIAL OR NATURAL
Topflor wood planks and parquet flooring
• Both are solid hardwood • Tongue and groove • Ideal for high traffic areas - foyers, family rooms, kitchens, etc. • No nails just glue down • Tile has hardened acrylic finish

Perimeter, area, decimals, money, sequencing, ordering information

- How many tiles do you need for a room measuring 12 x 13 feet?
- Compute the sales tax on the total cost of the tiles
- What is your total cost?
- Including tax, what is the cost per tile in your floor?

Castrol FREE Oil Filter MAIL-IN REFUND

Prices Effective
March 30th thru
April 6th, 1990

BUY A CASE OF *Castrol*
AND ANY OIL FILTER

GET *UP TO* $3.00 BACK
ON THE OIL FILTER

See Local Dealer for details

Castrol GTX 20W/50
Castrol GTX 10W/40
Castrol GTX 10W/30 Reg. Case Price $17.88
Castrol GTX 5W/30 Reg. Quart Price $1.49
Heavy Duty 30

SALE PRICE CASE $14.28 QUART $1.99

Percentages, conversion to decimals, division, comparing data

- How many days is the sale in effect?
- How much money do you save by buying the case?
- How much is that per quart?
- What percentage discount is the case price over the unit price?
- With the sales tax, how much is the cash price?

Our Pima Towel has FOUR times more Pima cotton, so it's softer, more absorbent.

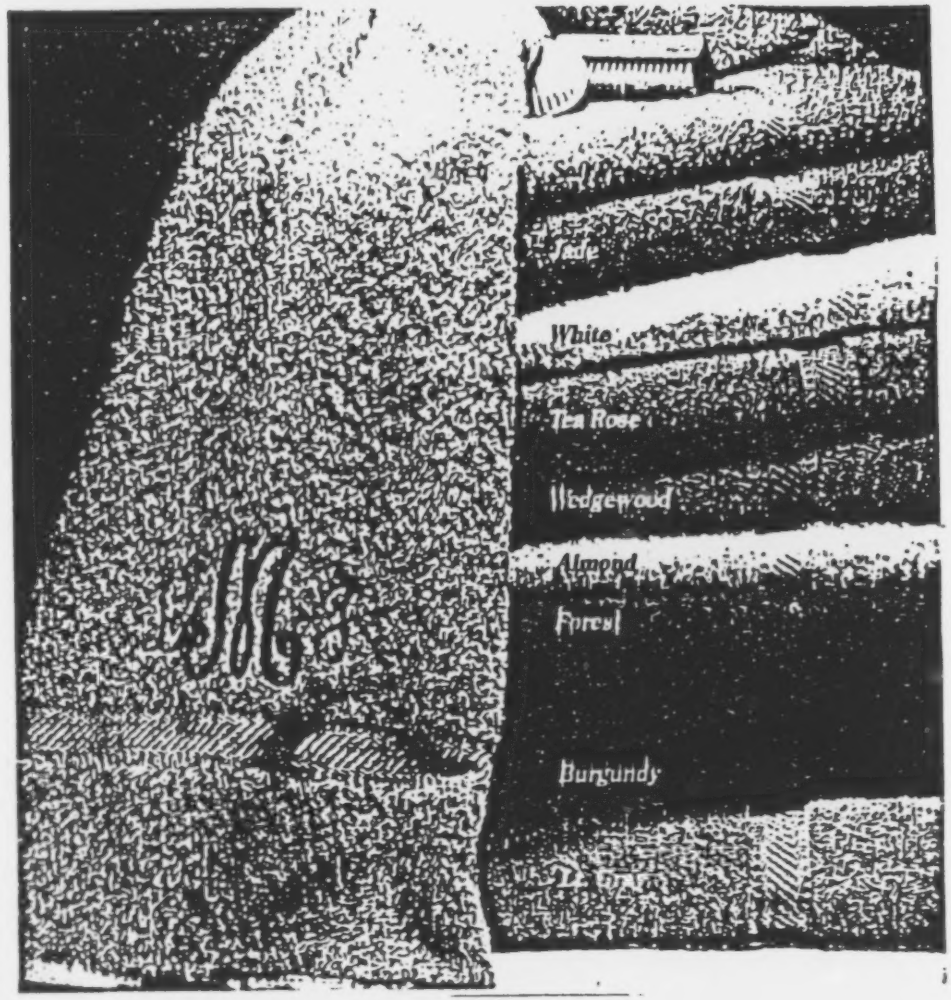
Most towel mills blend Pima cotton with short fuzzy carded cotton for durability. Only problem is they blend as much as 80% carded cotton with only 20% Pima. And still call it a "Pima Cotton Towel."

At Lands' End we do things a little differently.

Our Pima Cotton Towel is 80% Pima cotton and 20% carded cotton (exactly opposite to what most others do!). Better than that, every loop in our towel is pure Pima, so it's soft, absorbent, luxurious.
The carded cotton is used in the ground weave, where it keeps the silky pima fibers in place, adds durability.
Machine wash. Imported. *Colors right.*

Bath Towel (27"x50")	06792314	14.50
Hand Towel (16"x30")	06789318	8.50
Set of 2 Washcloths (13"x13")	06790313	7.50
Bath Sheet (35"x70")	0679331X	27.50
Set of 3 Fingertips (12"x18")	06791319	11.50
Tub Mat is made of 100% carded cotton (22"x34")	06794315	17.50
Pima Towel Set with free monogramming! Includes 2 bath towels, 2 hand towels, 2 washcloths.	09404311	53.50

Monogram it! See opposite page.



Percentages, subtraction, multiplication with zero, conversion to decimals, dollar amounts

- What is the cost of the Pima cotton in the bath towel?
- What is the cost of the corded cotton in the hand towel?

CHICKEN CORN CHOWDER

1 Large Potato, Diced
1 Medium Onion, Chopped
1 Eight Ounce Can of Corn, Undrained
Parsley
2 Cups of Water
1/2 Cup of All-Purpose Flour
1 1/2 Cups of Cooked Cut-Up Chicken
1 Medium Carrot, Thinly Sliced
3 Medium Celery Stalks, Thinly Sliced
10 3/4 Ounce Can of Condensed
Chicken Broth
Salt and Pepper
1 Cup of Milk
2 Cups of Milk

Serves: 6 People

Origin: Southern USA

1. Add potato, carrot, onion, celery, corn, broth, water, salt and pepper in Dutch oven.
2. Heat to boiling.
3. Reduce heat, cover and simmer until tender (about 10 minutes).
4. Shake flour and milk in tightly covered container and gradually stir into hot mixture.
5. Heat to boiling, and boil for one minute.
6. Stir in chicken and remaining milk.
7. Heat over low heat, stirring occasionally, just until hot, about 10 minutes.

RICE PUDDING

2 Eggs, Separated
2 Cups of Milk
1 Tablespoon of Butter, Melted
2 Tablespoons of Confectioners' Sugar
1/2 Cup of Sugar
1 Cup of Cooked Rice
1/2 Cup of Raisins
1/8 Teaspoon of Ground Nutmeg

Serves: 6 People

Origin: Pennsylvania Dutch

1. Beat egg yolks; mix in sugar and milk.
2. Stir in rice.
3. Mix in butter and raisins.
4. Pour mixture into buttered 1-quart baking dish.
5. Beat egg whites until frothy; add confectioners' sugar while beating.
6. Spread egg whites on top of rice mixture.
7. Sprinkle with nutmeg.
8. Bake at 325 degrees about 30 minutes.

Write the Question

Invent your own problem from the following information.
Make up your own units (dollars, months, feet, etc.).

1. Write your own labels to begin each problem.
2. Write a question based on the facts.
3. Write and solve a number sentence for each problem.
4. Ask yourself, "Does the answer make sense?"

1. Sue has 12 books
   Nora has 17 books
   Question: How many books do they have in all?

   ____ ____ ____ = ____
   number | operation symbol | number | answer

2. John bought 24 _____
   Kurt bought 15 _____
   Question: _____

   ____ ____ ____ = ____
   number | operation symbol | number | answer

3. Mr. Bedison saved 25 _____
   Mr. Yolanda saved 58 _____
   Question: _____

   ____ ____ ____ = ____
   number | operation symbol | number | answer

4. Les traveled _____
   He used _____ gallons of gasoline.
   Question: _____

   ____ ____ ____ = ____
   number | operation symbol | number | answer

5. Regular price _____
   Sale price _____
   Question: _____

   ____ ____ ____ = ____
   number | operation symbol | number | answer

6. Jack saved _____
   He spent _____
   Question: _____

   ____ ____ ____ = ____
   number | operation symbol | number | answer

BEST COPY AVAILABLE

FROM: CONTEMPORARY'S DISCOVERING BASIC MATH CONCEPTS, WHOLE NUMBER MULTIPLICATION AND DIVISION, NUMBER

BEFORE YOU HIT THE TRAIL

CHIPS AND SALSA 1.75

TEXAS HOT PEPPER CHEESE TOAST ..... Served With Salsa 2.65

TEXAS TORPEDOES 3.65
Jalapeño Peppers, cut in half, stuffed with cheddar cheese and breaded.
Ugly, but not too HOT! Served with Ranch dressing.

"FALO FRIED SHRIMP" 3.95
Lightly breaded and dipped in our famous wing sauce.

GOLD RUSH 3.95
100% white meat chicken fillets deep fried and served with honey mustard sauce.

WINGS 2.95
3/4 pound of chicken wings served Buffalo or Bar-B-Que style.

MOZZARELLA CHEESE STICKS ..... Served With Honey Mustard Sauce 3.65

VEGGIE-PLATE 1.95
Carrot, celery and cucumber sticks served with Ranch dressing.

SANDWICHES

Served with cinnamon spiced applesauce, pickle spear, ANY side order and your choice of sauce.

SLICED BEEF BRISKET "OUR SPECIALTY" 4.95
U.S.D.A. choice beef slooow...cooked for up to 16 hours over North Carolina hickory wood giving that melt in your mouth tenderness to our brisket that is then sliced to order.

SHREDDED PORK 4.95
Shredded, tender and lean, seasoned to perfection with our mild BBQ sauce.
We also include some garlic/vinegar slaw on the side to make it Carolina style!

SMOKED TURKEY BREAST 4.75
Pure, lean, white meat delicately sliced just the way you like it on a fresh toasted kaiser bun. Available with lettuce, tomato & mayonnaise...just ask!

NEW! GRILLED TUNA STEAK 5.95
A healthy new addition...A prime tuna steak marinated and grilled, served on a toasted kaiser bun with salsa on the side.

"PITTSBURGH STYLE" CHIPPED HAM BARBEQUE 4.45
Chipped Ham Barbeque served the traditional style with our own special sauce topped with cheddar cheese on a toasted bun. Just like Iowly's used to serve!

REDFISH 5.25
1/4 pound of fresh redfish fillets with the tastiest breading around.

NEW! CHICKEN BREAST 4.95
Over 1/4 pound of marinated and lightly seasoned chicken, then topped with swiss american cheese, honey mustard and a slice of tomato.

SHREDDED BEEF 4.95
Sizzling shredded beef brisket, marinated in our mild BBQ sauce and served on a piping hot grilled roll...more than a mouthful.

BURGERS AND DOGS

All of our hamburgers are freshly prepared with U.S.D.A choice EXTRA LEAN ground meat.
Served with cinnamon spiced applesauce, pickle spear. House Potatoes and Creamy Cole Slaw

CHHAND 4.75
Over 1/3 pound of pure beef grilled to perfection topped with our Bar-B-Que sauce and a touch of horseradish to spice it up.

STAGECOACH 4.75
1/3 pound of pure beef freshly grilled topped with lettuce, tomato, mayonnaise and American cheese.

WAGON WHEEL 4.95
1/3 pound of pure beef grilled, topped with our award-winning chili, real cheese and american cheese.

TRAIL DOGS 4.25
Two all Beef Dogs grilled to order, served with your choice of onions, relish, mustard or ketchup. MAKE IT A CHILI AND CHEESE DOG FOR ONLY .45¢ EXTRA EACH.

ON THE SIDE

HOUSE POTATOES
Our #1 seller...hand cut red potato slices seasoned and deep fried. Try them with our sauce...they're great!
SOUTHERN FRIED OKRA
BAKED IDAHO POTATO
WESTERN STIR FRY
SWEET POTATO STICKS
GREEN BEANS N' BACON
SWEET CORN COBBETTE

BBQ PINTO BEANS
Our own secret recipe seasoned with beef brisket, onions and a special blend of spices
CREAMY COLE SLAW
CINNAMON SPICED APPLESAUCE
TOSSED SALAD
GARLIC/VINEGAR SLAW
PASTA SALAD
POTATO SALAD
BEER BATTERED ONION RINGS

ALL SIDE ORDERS 1.25

THE WATERING HOLE

FREE REFILLS on Coffee, Tea and Fountain Drinks

OLD FASHIONED IBC ROOTBEER 1.25
ICED TEA (freshly brewed) ..... .95
REGULAR FOUNTAIN ..... Coke ..... .95
Coke, Diet Coke, Cherry Coke, Lemonade, Sprite
SIOUX CITY CREME SODA 1.45
SIOUX CITY CACTUS ORANGE 1.45
SIOUX CITY SARSAPARILLA 1.45
O'DOUL'S AND SHARPS (non alcoholic beer) 1.55
LOWFAT WHITE OR CHOCOLATE MILK ..... .79
COFFEE OR HOT TEA ..... .89

Draft and bottled beer available at selected locations

TAKE IT FOR THE TRAIL

"FAMILY FEAST COMBO includes 2 pints of your favorite salad, 4 pieces of Texas Toast, 4 pieces of sweet corn. Serves four.

NEW! INCLUDES A WHOLE BOTTLE OF OUR FAMOUS BARBEQUE SAUCE.

BEST VALUE

		FAMILY FEAST COMBO
SLICED BEEF BRISKET	9.95/pound	15.95*
SMOKED TURKEY BREAST	8.95/pound	14.95*
SHREDDED BEEF	9.95/pound	15.95*
SHREDDED PORK	9.95/pound	15.95*
WHOLE BARBEQUE CHICKEN	6.95	12.95*
WHOLE RACK BABY BACK RIBS	13.95/rack	19.95*
WHOLE RACK PORK SPARE RIBS	13.95/rack	19.95*

Available uncut...great to reheat on the grill at home!

"BUFFALO WINGS" PARTY PAK ..... (by the dozen) 3.95/doz
The perfect party finger food...chicken wings deep fried and basted in our own special wing sauce. Includes Bleu Cheese and celery sticks. For EXTRA HOT, just ask!

HOMEMADE SALADS AND SIDES TO GO

POTATO SALAD
BBQ PINTO BEANS
GREEN BEANS 'N BACON
CREAMY COLE SLAW
GARLIC/VINEGAR SLAW
PASTA SALAD
CINNAMON SPICED APPLESAUCE

1/2 pint 1.39
Pint 2.49
Quart 3.69
TEXAS STYLE CHILI "NO BEANS" 4.95
Priced by the quart

DESSERTS TO GO

PECAN PATSY'S WHOLE HOMEMADE PIE 7.95
WHOLE APPLE CHEESE COBBLER ..... (serves 8-10) 13.95
WHOLE MISSISSIPPI MUD CAKE ..... (serves 12-15) 14.95

"POOCH PAIL" 1.50
1 quart of our finest scraps for your finest pooch!

OUR FAMOUS BARBEQUE SAUCE
MILD or HOT (18.5 oz. jar) 2.50

CALL OUR CATERING HOTLINE AT 369-2866
We cater from 30-5000
starting at $4.95 per person
Delivery/Setup and Serve or Pickup

Gift Certificates available

BEST COPY AVAILABLE

OfficeMax EMPLOYMENT APPLICATION

STORE:

23355 Mercantile Rd., Beachwood, Ohio 44122-9523, Phone: (216) 591-2200

PERSONAL INFORMATION

Name _____ Social Security Number ___-___-____

Present Address _____

Phone Number _____ Referred by _____

EMPLOYMENT DESIRED

Position _____ Date You Can Start _____ Wages/Salary Desired _____

Are You employed now? Y N If so may we inquire of your present employer? _____

Ever applied/been employed by OfficeMax before? Where? When? _____

Do you have any relatives/friends working for OfficeMax now? (If yes, list). _____

Have you been convicted of any offense other than a minor traffic violation? Y N If yes, explain: _____

_____

Are under 18 years of age? Y N If yes, date of birth: _____

Are you interested in ☐ Full Time ☐ Part Time How many hours per week? _____

WORK AVAILABILITY

MON. • FRI. / DAYS _____ EVENINGS _____ OPEN _____ COMMENTS _____

SAT. • SUN. / DAYS _____ EVENINGS _____ OPEN _____ COMMENTS _____

Specify days/time that you cannot work? _____

FORMER EMPLOYERS

(List below last three employers, starting with last one first).

DATE/MONTH/YEAR	NAME AND ADDRESS OF EMPLOYER	WAGES/ SALARY	LAST POSITION	REASON FOR LEAVING Supervisor name/phone #
FROM		STARTING		
TO		ENDING		
FROM		STARTING		
TO		ENDING		
FROM		STARTING		
TO		ENDING		

30